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Minnesota Power is Utility of Year

BARRINGTON, IL—Minnesota Power has been named Electric Utility of the Year by *Electric Light & Power*. It is the 18th electric utility to be selected for the honor since inception of the national program in 1969.

The utility was selected on the strength of its performance in 1985, and to-date in 1986, on behalf of its customers, shareholders and employees, with respect for the quality of life and the environment within its service territory.

In announcing the selection of the Minnesota utility, *EL&P* Editor-in-Chief Robert A. Lincicome commended the utility for its efforts to offset major load losses resulting from severe economic pressures on its primary industrial customer base. These efforts, he said, led the company into an aggressive investment and diversification mode that has provided a new stimulus to the local ecomomy, created jobs, and strengthened the financial base of the utility.

"It has been a win-win-win effort, in which customers, employees and shareholders all have profited," he added.

A report describing the achievement of Minnesota Power begins on page 13

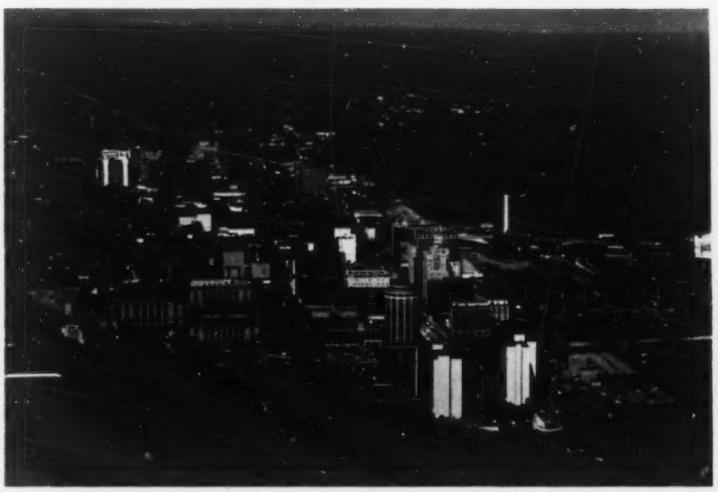
Minnesota Power serves customers in a 26,000 sq mile service territory making up approximately the northeastern one-third of the state. It is an area rich in forests, iron and other minerals.

The company is diversified and operates electric, telephone and/or water utility subsidiaries in Wisconsin, Arizona, Colorado, Florida, New Mexico and Oklahoma. It is a partner in Norlight, a utility-owned fiber-optic network designed to connect upper and lower midwest business centers. It is 50 percent partner in a large Duluth papermill, currently under construction, and holds a 43 percent interest in a major Florida land development company, plus equipment leases and other assets. It currently is evaluating several potential new diversification activities.

The company's diversification program resulted from management's efforts to offset the loss of load and revenues associated with the decline of taconite mining and steel industry activity. It is strongly dedicated to industrial and economic development to benefit its service territory.

In 1985, the company realized a 17 percent gain in net income, and 15 percent improvement in per-share earnings despite a 1 percent decline in revenues and an 11 percent reduction in kilowatthour sales. Its return on common equity improved to 16.7 percent from 15.4 percent in 1984.

Rates in 1985 were some 30 percent below the national average for investor-owned electric utilities and customers have not had a rate increase since 1981. The company currently is not engaged in any generation expansion programs. In fact, it is selling capacity to Northern States Power and will not need new capacity until the mid-1990s.



Duluth, MN is the headquarters city for Minnesota Power, Electric Utility of the Year for 1986.

Tax bill contains good news for customers, bad news for utilities

CHICAGO—What's good for the electric utility customer may not be good for the utility itself.

According to Duff & Phelps, Inc. analyst William A. Abrams, the new tax bill may benefit electric consumers and hurt the companies. He explained that customers will generally pay lower rates, while the financial credit quality of the industry will be weakened.

Writing in the Sept. 29 edition of *Credit Decisions*, a D&P publication, Abrams said, "Pre-tax earnings will decline, internal cash generation will be lower, and some companies, under the alternative tax provision, will pay tax on non-cash earnings previously excluded from taxation."

Major provisions

He said the major provisions of the bill relating to utilities are:

- the drop in the tax rate to 34 percent.
- the loss of the Investment Tax Credit (ITC).
- the stretch-out of tax depreciation lives.
- the 20 percent alternative tax provision.

For regulated industries, like electric companies, Abrams noted that Duff & Phelps expects political pressure for immediate rate reductions.

"As capital intensive companies," he wrote, "the electrics will have less cash due to the loss of the ITC and the stretch-out of tax depreciation lives."

Abrams explained that the difference between the 46 percent rate and the 34 percent rate will lower the accumulated deferred tax reserve. Utilities will then flow this differential back to customers over the life of the assets that created the reserves, thus reducing revenues and cash.

"But utilities with high non-cash earnings—such as AFC, accrued rev-

Continued on page 23

Future supply, demand outlook clouded, says NERC forecast

PRINCETON, NJ—Uncertainty clouds the future electric supply and demand picture, says the North American Electric Reliability Council (NERC) in its latest reliability review .

"While utilities have developed adequate electric supply plans, many of these plans are at risk," stated NERC in an executive summary of the report. "A leading concern of the Council is the uncertainty of the electric demand forecast which assumes demands will be reduced by load management, conservation and customer-owned generation.

"Of equal concern are the supply

Continued on page 23

1986-1995 FORECAST OF PEAK DEMAND AND ENERGY

	NERC U.S.	NERC Canada[a]	NERC Mexico[b]	NERC Total
Summer Peak Demand (Thousands of MW)				
1986	475	47	0.6	523
1995	577	61	1.2	639
Average Growth (%/yr)	2.2	3.0	7.1	2.3
Winter Peak Demand (Thousands of MW)				
1986/87	435	65	0.4	500
1995/96	533	83	0.8	618
Average Growth (%/yr)	2.3	2.8	7.1	2.4
Annual Energy (Millions of MWh)				
1986	2,525	350	3.0	2,878
1995	3,103	462	5.6	3,571
Average Growth (%/yr)	2.3	3.1	7.3	2.4

[a] Includes Nova Scotia [b] Northern portion of Baja California, Mexico only
Source: 1986 Reliability Review: NERC

Consumers Power and Dow Chemical to convert Midland

LANSING, MI—Consumers Power and Dow Chemical announced in September that they will work together to convert the idled Midland nuclear plant into a natural gas combined-cycle cogeneration plant.

Construction was halted in 1984 on the 85-percent complete, $4.1 billion plant. Consumers Power spokesperson Mike Koschik said approximately $560 million will be needed to convert the facility.

Under the agreement, Dow will become an equity participant in the project and would use steam and electricity from the plant at its Michigan Division Midland plant. The project will be owned by Dow, Consumers Power and other potential participants that were not identified. The utility spokesperson said that 2 or 3 participants and further details of the project should be finalized this month.

Koschik noted that the utility will contribute about $1 billion in existing plant equipment and has promised not to spend more than $50 million on the conversion.

Both companies also agreed to drop

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News Briefs

JILL MINNER, Assistant Editor

Feasibility study to be conducted on OPPD/NPPD merger

● According to Omaha Public Power District (OPPD), Norris Public Power District has requested that a study be conducted on the feasibility of a merger between the two utilities. "This study will analyze the impact of such a merger on OPPD and its customer-owners, which is our primary concern," said OPPD President Bernard W. Reznicek. "It will also look at the effect that a merger would have on state power supply needs and other financial and legal matters."

Virginia Power plans to install combined cycle unit

● Virginia Power has announced plans to install a coal gasification/combined cycle unit at its Chesterfield Power Station. Installation of the 205-MW unit is scheduled to begin in January 1988, according to the company. Completion of the second stage, a 65-MW steam cycle, is targeted for 1991. Virginia Power said a coal gasifier would be added in the 1990s if coal gas costs dropped below the cost of natural gas. The company also announced that it will not seek an increase in base rates in 1986 or 1987.

ANO becomes branch of Nat'l Academy for Nuclear Training

Arkansas Power & Light Co. said its Arkansas Nuclear One (ANO) plant was recently recognized as a branch of the National Academy for Nuclear Training. The academy focuses and unifies the training activities of the U.S. nuclear utility industry and serves as a vehicle for excellence in nuclear training. Pictured (from left to right) are: Jimmy D. Vandergrift, ANO training manager, Walter Coakley, director-accreditation division of the Institute of Nuclear Power Operations, Jim Levine, ANO site director, and Eric Johnson, director-reactor safety and projects division of the Nuclear Regulatory Commission.

NUS Corporation sells radwaste subsidiary

● NUS Corporation said it has sold its wholly-owned subsidiary, NUS Process Services Corp., to London Nuclear Services, Inc. The NUS subsidiary processes radioactive waste and, according to NUS Corp., will be merged with London Nuclear Services, Inc. to create LN Services, Inc.

Rockland Electric Co. requests rate reduction

● Rockland Electric Co. has asked the New Jersey Board of Public Utilities for an electric rate reduction of $6.6 million annually, according to the company. Under the proposed reduction, the company said a customer using 500 Kwh monthly would save $3.42 a month. Company President and Chief Operating Officer Thomas A. Griffin, Jr. stated that if the reduction is approved, Rockland's bills would be lower than they have been in seven years.

OECD nuclear generation grows by fastest rate since '77

● According to the Nuclear Energy Agency's (NEA) annual survey, as reported in a Canadian Nuclear Association newsletter, nuclear electricity production in the Organization for Economic Cooperation & Development (OECD) countries had a 19.2 percent growth rate in 1985, the largest rate of increase since 1977. The NEA's survey, *Summary of Nuclear Power and Fuel Cycle Data in OECD Member Countries 1986*, reported that all but one of the 13 OECD countries with nuclear programs increased their nuclear electricity generation in 1985. Five countries that had more than a 10 percent increase in nuclear generation were Belgium, the Federal Republic of Germany, Japan, Spain and Switzerland, according to the survey. The report also found that nuclear power is now the second largest contributor to electricity generation in OECD after coal, which contributes 42 percent.

EPA honors PSI with sulfer dioxide control award

● The Environmental Protection Agency (EPA) has presented its first annual "Award for Excellence in Sulfur Dioxide Control," to Public Service of Indiana (PSI), according to EPA. The award was given for PSI's exemplary operation of the sulfur dioxide control system at Unit 5 of its Gibson generating station. EPA said Unit 5 burns high-sulfur coal and is equipped with a limestone scrubber system that began operation in 1983. During 1985, EPA reports, the unit's FGD system had an average reliability of 99.8 percent.

NRC issues operating license to Illinois Power for Clinton

● Illinois Power Co. said it has been issued a facility operating license by the Nuclear Regulatory Commission, permitting the utility to load fuel and conduct low power testing at its Clinton power station. The license, according to Illinois Power, authorizes the utility to operate Clinton at up to five percent power. The company expects fuel loading to take approximately three weeks.

NRC given OK to authorize fuel license for Braidwood 1

● According to Commonwealth Edison Co., the Atomic Safety and Licensing Board has authorized the Nuclear Regulatory Commission (NRC) to issue a fuel load license to Edison's Braidwood Station Unit 1. Edison said the NRC will issue a license when it determines that the unit has fully met all fuel load requirements. The license would permit Edison to conduct pre-startup testing of Braidwood 1. At press time, Edison was awaiting approval by the Director of Nuclear Reactor Regulation and full licensing hearings were still being conducted.

British banks loan China $610 million to finance nuclear plant

● China has signed a $610 million loan with British banks to help finance the construction of its Guangdong nuclear power station and the purchase of two 985-MW turbine generators from General Electric Co. of Britain, according to *The Wall Street Journal*. The contract for the two generators, expected to start operation in 1992 and 1993, will be approximately $360 million. The Guangdong station is located in Daya Bay, 30 miles from Hong Kong, and about 70% of its production will be sold there, according to a memorandum of understanding signed by China and Britain earlier this year.

Westinghouse dedicates energy center

Westinghouse Electric Corp. recently dedicated its headquarters for electric power generation in Monroeville, PA. Technologies managed by the Westinghouse Energy Center include electric power from the atom, fossil fuels, the sun, water and low-premium fuels. The center also houses the world's largest private computer complex dedicated to science, according to Westinghouse.

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EL&P readers whose responsibilities include both Generation and Transmission/Distribution receive both technology sections. Other readers receive the technology section that applies to their respective area of responsibility. The Generation edition is indicated by a single dot (•) in the upper right corner of page 1, the T/D edition carries two dots (••). All readers receive EL&P's industry news section.

Editorial

Texas verdict poses liability threat to all electric utilities?

If a recent Texas Appellate Court decision stands, electric utilities in all parts of the country may find it more difficult—and expensive—to obtain liability insurance. Moreover, utilities will be branded as providing an essentially "dangerous" product, regardless of their efforts to ensure customer safety, and that can hurt in many ways.

The verdict in the case, *Houston Lighting and Power v. Reynolds*, upholds a lower court award of $3.7 million in compensatory and punitive damages to the family of a permanently injured teenage boy. The youngster had lost one arm and both legs as a result of connecting together eight 6-ft aluminum tent poles and using them to touch a 35-kV line running above the backyard of a friend. According to testimony, the youngster had told his friend that he couldn't be hurt by touching the line, since it was necessary to touch two lines to receive a shock.

The jury in the initial action held that the doctrine of strict liability applied and awarded the damages. And although the Court of Appeals heard and accepted evidence that the company had spent between $50,000 and $100,000 per year on educational activities, it upheld the lower court's jury decision that the company failed to adequately warn of the dangers of the 35-kV line. Electric industry trade associations are filing friend of the court briefs.

The threat to utilities everywhere, since such precedent travels fast, is that if the Texas decision stands, the question in cases involving electric shock will be how much, not whether, the utility should pay. Guilt will be presumed unless proof to the contrary can be provided.

There are a number of steps that utilities could take. But before utilities get together to go off in all different directions, it would seem that there is real need for the courts, legal groups, insurance companies and utilities to work out some sort of standard for what constitutes a sincere and acceptable warning and danger education program. Until such a standard is developed, and presumption of guilt and the deep pocket approach to compensation is eliminated, utility efforts to educate and/or warn of the dangers of electricity will be a shot at an invisible, moving target. Such efforts are as likely to miss as they are to hit the target.

Robert A. Lincicome, Editor-in-Chief

P.S.—In the interim, mightn't a regular program of Public Service messages on Saturday morning TV programs be an effective, and economical way to warn youngsters of the dangers of electricity?

Real 'preference' in hydro relicensing bill goes to utility that renders best service

There is bound to be continued argument over the elimination of the 'public preference' clause in the hydro relicensing bill signed into law by President Reagan on October 16. But it seems to us that the final version is in the best interest of all consumers, not those of any particular type of utility.

As hydro facility licenses come up for renewal, it will be the responsibility of the Federal Energy Regulatory Commission to grant the new license to the utility that submits the best plan for operating the facility, taking into account the potential impact on ratepayers if the license were transferred, proposals to upgrade recreational and environmental protection facilities and other public interest criteria. The issue of preference, which was a part of hydro-licensing procedures in the Federal Power Act of 1920 but was not specifically mentioned in that portion of the Act dealing with relicensing, has been the subject of controversy in the past. FERC and the courts have issued conflicting rulings. The new legislation ends that controversy.

What the new law really means is that those consumers that have been paying the cost of a hydro project will continue to enjoy the benefits of low-cost electric power from it. While we acknowledge that the legislation, titled the Electric Consumers Protection Act of 1986, appears to favor customers of investor-owned utilities, which operate most of the nation's hydroelectric facilities, it does work both ways. Where investor-owned utilities are licensed to operate the hydro facilities, public power utilities will enjoy no special advantage in relicensing procedures. Similarly, investor-owned utilities will have no advantage in the relicensing of hydro projects currently operated by Public Utility Districts or other publicly owned utilities.

Residential electric bills up 1%

WASHINGTON—Residential electricity bills rose about one percent in the past year, according to the results of a nationwide survey recently released by the National Association of Regulatory Utility Commissioners. In comparison, the Consumer Price Index increased about 3.9 percent.

Using a 500 kWh consumption level as the base, the report indicated that the nationwide average cost per kWh climbed from approximately 8.02 cents to 8.1 cents during the twelve month period from the previous survey. The survey also included monthly uses of 250 kWh, 750 kWh and monthly costs for typical usages for electric space heating.

The survey showed that residential customers are paying in excess of 11 cents/kWh in some 15 service territories, while in 22 others the rate is below 6 cents/kWh. The range was from a low of 3.6 cents/kWh in Lewiston, Idaho, to a high of 14.4 cents/kWh in New York City.

The survey was based on the rates of major investor-owned electric companies in effect for their largest service areas during December 1985 and January and February 1986. A total of 196 distinct service areas were surveyed in 49 states and the District of Columbia.

Analysis by region indicated that rates in the Northeast and Pacific Southwest regions were the highest, while rates of companies in the Northwest and Rocky Mountain areas were the lowest.

TEN MOST EXPENSIVE AREAS

Rank	City,State	Company	Bill	Avg. Cost
1	New York, NY	Consolidated Edison	$215.94	14.4¢
2	Kahului, HI	Maui Elec. Lt.	$205.08	13.7¢
3	Hilo, Hi	Hawaiian Elec.	$204.07	13.6¢
4	Long Beach, NY	Long Island Ltg	$195.91	13.1¢
5	New Bedford, MA	Commonwealth Elec.	$189.09	12.6¢
6	Middletown, NY	Orange & Rockland Util.	$189.07	12.6¢
7	San Diego, CA	San Diego G&E	$184.94	12.3¢
8	Poughkeepsie, NY	Central Hudson G&E	$181.62	12.1¢
9	Philadelphia, PA	Philadelphia Elec.	$179.25	12.0¢
10	Bridgeport, CT	United Illuminating	$176.59	11.8¢

TEN LEAST EXPENSIVE AREAS

196	Lewiston, ID	Washington Water Pwr.	$54.30	3.6¢
195	Spokane, WA	Washington, Water Pwr.	$55.50	3.7¢
194	Ontario, OR	Idaho Pwr.	$57.78	3.9¢
193	Kalispell, MT	Pacific Power & Lt.	$62.01	4.1¢
192	Boise, ID	Idaho Pwr.	$62.70	4.2¢
191	Yakima, WA	Pacific Power & Lt	$64.14	4.3¢
190	LaGrande, OR	CP National	$66.36	4.4¢
189	Portland, OR	Portland General Elec.	$72.84	4.9¢
188	Bellevue, WA	Puget Sound P&L	$76.84	5.1¢
187	Newport, VT	Citizens Utilities	$78.21	5.2¢

EL&P publisher sold to Cahners

NEW YORK—Technical Publishing Company, publisher of *Electric Light & Power* and 20 other business publications, has been purchased by Cahners Publishing Co., former owner of *EL&P*.

The purchase was announced in September by The Dun & Bradstreet Corporation, parent of Technical Publishing Company. The purchase price was $250-million.

The agreement was finalized Oct. 31. Cahners, which publishes 34 trade magazines, is a subsidiary of Reed International of London. The sale included 20 of Technical's magazines. *Dun's Business Month* was not included in the sale.

Technical bought *Electric Light & Power* in 1977 from Cahners, which had published it since 1962.

Reed International had sales of $3 billion in the fiscal year which ended on March 31, 1986. Reed's other businesses in the U.S. include Reed Exhibitions, an organizer of trade shows, and R.R. Bowker, a supplier of information for book trade in the U.S.

Other publications

In the U.K., Reed publishes a wide range of consumer and business magazines, newspapers and owns one of the country's leading English law publishers. The company also publishes English language magazines and newspapers outside the UK and North America and has broad international interests in paper, packaging and paint.

Cahners is headquartered in Newton, MA.

Electric Light & Power

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NERC supply, demand forecast . . . from page 1

plans which rely heavily on additional non-utility generation, life-extension programs for aging generating units, and the purchase of large amounts of capacity from other utilities," NERC said.

Demand growths

Annual demand growths of 2.2 percent in the U.S. can be supported by the current supply plans of utilities. NERC estimates an 80 percent probability that annual demand growths will range from -0.2 percent to 4.4 percent.

The report urges the utility industry to make commitments now to new coal-fired capacity that will be needed in the next decade. NERC says that over 13 percent of the total capacity additions needed in the next 10 years are coal plants not yet under construction.

According to the report, non-utility generation makes up 11 percent of the planned capacity additions in the U.S.

Life extension and maintenance programs have helped utilities maintain the reliability of their older generation. NERC predicts that the average age of U.S. generating units will increase to 26 years by 1995, compared to 17 years in 1985 and 11 years in 1975.

Loaded to limits

Many transmission lines will be loaded to their reliability limits for extended time periods, said the review. "However," pointed out NERC, "utilities are finding it increasingly difficult to expand their transmission systems to meet these increased needs due to uncertainty about future benefits, lengthy licensing processes, and conflicting jurisdictions."

Purchases and sales of energy between utilities accounted for 20 percent of the energy delivered to customers last year, found the council. It said that increasing the purchases significantly in the future will be precluded unless transmission construction impediments can be overcome.

System will be stressed

NERC said the North American electric system "will be stressed in the years ahead as utilities adjust to non-utility generation, fluctuating energy prices, increasing competition, and less control of their plans and operations. To meet these challenges, utilities will need to keep existing units in operation, keep construction on schedule, work with regulators to shorten lead times for new facilities and strive for effective load management and conservation programs."

Midland conversion . . . from page 1

their current legal proceedings that began when Dow backed out of its steam agreements with the utility after the Midland plant was put on hold. The combined lawsuits represent over $500 million.

Dow and Consumers Power are expected to ask the Michigan Public Service Commission to expedite the removal of current restrictions on spending funds to convert the plant.

In a joint statement, Dow vice president and general manager of the Michigan Division F. R. Lehman and Consumers Chairman and CEO William T. McCormick, Jr., said, "We believe that this cooperative agreement will greatly benefit both companies and is in the best interests of the State of Michigan...Working together, we can end the controversy and put the proposed Midland cogeneration plant to work for Michigan."

Constructed in two phases

The utility said the plant would be constructed in two phases. The first 875 MW unit is scheduled for completion in 1989, and the second 425 MW unit will be finished a few years later.

Twelve combined-cycle gas turbines would be hooked up to the plant's existing equipment. Koschik said the utility hopes to begin design and engineering work on the plant by the end of the year.

He pointed out that Consumers Power is very supportive of cogeneration. The company recently formed a subsidiary called CMS Cogeneration to help foster cogeneration growth in its service area. Although not much currently exists, Koschik said the utility expects that over the next 15 years cogeneration will account for five percent of its total output.

Reaction in the Midland area to the conversion concept has been "very positive," said Koschik.

A similar conversion idea was initially proposed in April 1985 involving Consumers Power only.

Tax bill contains good, bad news . . . from page 1

enues, or deferred expenses—may be faced with higher taxes," he warned. "The 20 percent alternative tax will impose a cash tax expense on heretofore untaxed annual earnings."

Abrams predicts that internal cash will be lower for most companies. With no change in construction spending plans, he said a company that has been expecting 100 percent internal cash might have only 80 to 90 percent.

"Companies that had forecast enough internal funds over five years to meet all construction and refunding needs —or non-utility diversification—now expect to return to the capital markets just to cover construction and refundings," he wrote.

For utilities subject to the alternative tax, Abrams said the company's operating expense for income taxes may be higher than the amount currently included in rates. That means the utility will have to pay the tax instead of deferring it, thus increasing financial needs and raising capital costs.

Abrams said in the newsletter that companies with tax loss carryforwards will use them up more quickly. Also, he thinks the new tax bill may discourage investment in PURPA machines, qualifying facilities, and cogeneration.

"In summary, the tax bill reduces quantitative protection measures, thereby increasing financial risk for the electric utilities," stated Abrams. "For some companies, business risks may also grow."

AIF publishes booklet on low-level radwaste

BETHESDA, MD—The Atomic Industrial Forum, Inc. has just published a booklet, *Low-Level Radioactive Waste: Building a Perspective.*

The booklet examines the main sources of low-level radioactive waste, how to reduce its volume, ship, package and bury it, and more.

For information on the booklet contact Don Winston, Scott Peters or Ellen Werther at (301) 654-9260 or Eugene Gantzhorn at (212) 599-1881.

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Manufacturing will take place at the Kuhlman Power Transformer Division factory in Crystal Springs, Mississippi, while the headquarters will be located in Dearborn, Michigan.

For more details, contact:
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22360 Garrison Street
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or call: (313) 277-2250

Inquire R.S. 12

Electric transportation systems to expand: EPRI

PALO ALTO, CA—More than 45 percent of those questioned in a recent survey of electric utilities say they have plans to expand or introduce electric transportation (ET) systems in their service areas.

The Electric Power Research Institute conducted a survey of 85 electric utilities to determine industry involvement and awareness of ET alternatives.

The systems include electric cars and trucks, electric hybrid vehicles, fuel cell electric vehicles, electrified highways, electric buses, electric rail transit, personal rapid transit, dual mode transit, automated guideway transit and electrified railroads.

In a report on the survey findings EPRI said, "An important factor motivating utility interest support for ET development is that it represents a significant new market for electricity."

About 75 percent of the utilities surveyed said that some form of electric transportation is currently in use within their service areas. (See chart.) The survey found that almost half of the respondents said electric cars and trucks are being used.

EPRI noted that electric rail transit systems, are operating in 24 percent of the service areas. A small number of utilities reported the use of electric buses, electrified railroads, and a variety of experimental systems.

Of those utilities expressing interest in expanding their ET usage, electric rail transit was mentioned by 27 percent of the participants, followed by electric cars and trucks (19 percent).

"Economic and technical considerations were identified as the primary barriers to broad-based ET use," stated EPRI. "Public awareness and social resistance were also noted, but in general were not viewed as representing a significant barrier to the use of ET systems."

The survey found that new systems face technological and economic barriers. EPRI said many of the respondents stated the need for a propulsion battery with high-energy and high-power capabilities.

Other requirements mentioned that are needed for the expansion of EV use are a promotional network, qualified service facilities, convenient battery charging, and the availability of a warranty backed by a 'name' manufacturer.

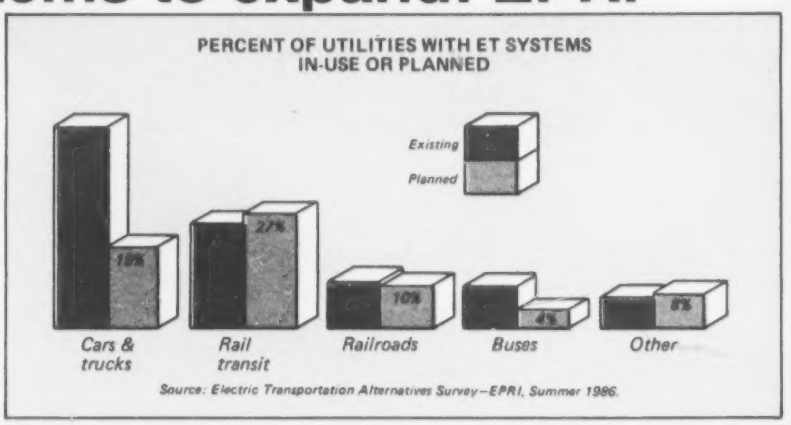
Utilities are extremely interested in being kept informed about the state of the art (89 percent). Of the companies supporting EPRI's research, 83 percent encouraged the institute to expand its ET research program.

In response to the survey findings, EPRI said it has begun an assessment of electric hybrid vehicle options. It also has started an Advanced Transportation Systems (ATS) Working Group made up of electric utility representatives.

The working group will evaluate ATS alternatives and make recommendations to EPRI on promising development and demonstration opportunities.

Next year, EPRI plans to form a centralized ATS information service that will be used to keep the utility industry informed about ATS technology and market achievements.

For more information on the survey and EPRI's ET program, call EPRI Program Manager Lawrence O'Connell at (415) 855-2644.



Source: Electric Transportation Alternatives Survey—EPRI, Summer 1986.

SDG&E system tracks its line-crew 'call-outs'

SAN DIEGO—San Diego Gas & Electric Co. has developed a new system for keeping track of emergency crew call-outs to restore service. The system was designed for district office use and replaces a centralized system that had been kept on SDG&E's mainframe computer.

The system, which was written in dBase III, was designed to run on personal computers and is completely menu-drive, making it usable to anyone familiar with personal computer operation, according to Frank Armbrust, office supervisor for Northeast construction operations.

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Electric Light & Power

THE NEWS MAGAZINE OF ELECTRIC UTILITY MANAGEMENT AND TECHNOLOGY

A CAHNERS PUBLICATION

TVA's Bull Run station ranked most efficient in 1985: UDI

WASHINGTON—Tennessee Valley Authority's coal-fired Bull Run plant was the most efficient generating station in the U.S. in 1985, according to a new report from the Utility Data Institute.

The plant had a heat rate of 8900 Btu per kWh. Bull Run was followed by 1984's leader, Massachusetts Municipal Wholesale Electric Company's Stonybrook combined cycle plant, at 9023 Btu/kWh. Duke Power's Marshall station came in third at 9051 Btu/kWh.

UDI's report differs from *Electric Light & Power's* annual August list. The UDI report looks at total plant or unit heat rate, while EL&P's examines individual unit heat rates.

The UDI study contains top 100 electric utility rankings on heat rate, production expense and net output. The top 20 plants, ranked by heat rate and production expense, are shown in the tables.

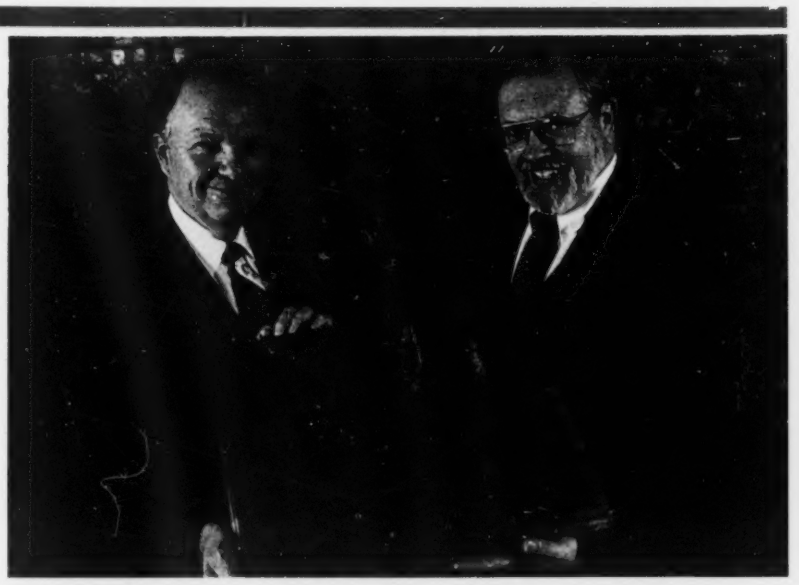
For the first time, UDI has included a directory of U.S. power plant managers in the report. Names, addresses and telephone numbers are arranged by state and by utility company within each state.

Nine of the top ten most efficient plants are coal-fired. United Illuminating Company's New Haven Harbor plant had the lowest heat rate among oil-fired plants (9576 Btu/kWh). West Texas Utilities Company's Oak Creek station had the lowest heat rate among gas-fired plants (9789 Btu/kWh).

UDI's database of 672 plants represents about 97 percent of the electricity generated by steam electric plants in the U.S. in 1985. The plants represent a total capacity of 516 GW. Data in the report was compiled from FERC Form 1s, EIA Form 412s and REA Form 12Ds.

Of the 100 most efficient plants, UDI said that 83 are coal-fired, 6 oil-fired, 9 gas-fired and 2 combined-

Continued on page 3



Employees 'earned' MP's award

Calling Minnesota Power's selection as Electric Utility of the Year "a tribute to the hard work and dedication of our employees," MP Chairman and CEO Jack F. Rowe (l) accepted *Electric Light & Power* magazine's award from Robert A. Lincicome (r), *EL&P* Editor-in-Chief, at a special luncheon presentation in Duluth on October 31. The Minnesota utility was the 18th company to be selected to receive the magazine's annual award.

Canada connection dedicated

MONROE, NH—Canadian hydroelectric power began flowing into New England in October through a new interconnection that is expected to save the region's consumers about $600 million.

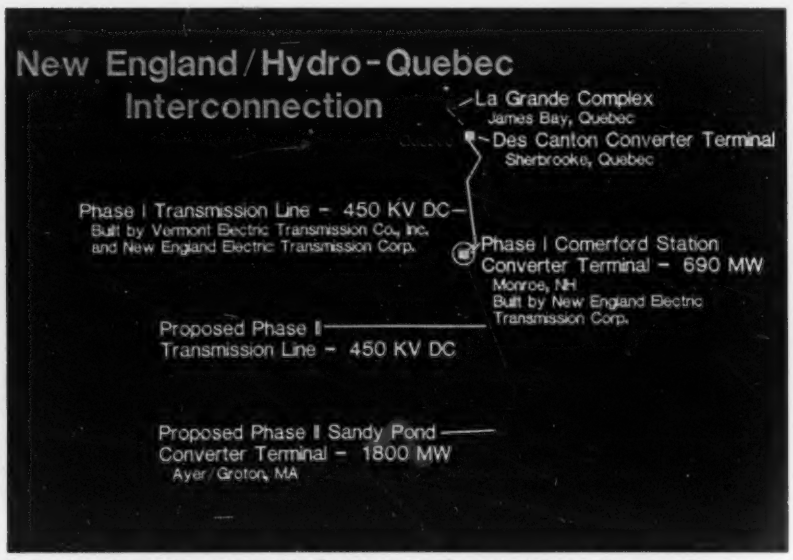
New Hampshire Gov. John Sununu, Vermont Gov. Madeleine Kunin, and Quebec Prime Minister Robert Bourassa joined New England and Quebec utility representatives at a dedications ceremony for Phase 1 of the New England/Hydro-Quebec Interconnection at the Comerford Station Converter Terminal here.

Another milestone

New England Power Pool Executive Committee Chairman Steven J. Sweeney called the project "another milestone in NEPOOL's successful fuel diversity program."

The Phase 1 interconnection will bring about 3 billion kilowatt hours from northern Quebec to New England annually between 1986 and 1997 on a DC line that will operate at 450-kV. The line has a 690 MW capacity. According to NEPOOL, that will meet approximately four percent of the region's projected electrical needs over the next decade.

With the addition of the proposed Phase II project in 1990, the interconnection is expected to provide 10 billion-kWh in 1991, or 10 percent of the region's annual electric demand. The current 107-mile direct current transmission line will be extended 133 miles into Massachusetts.


New England/Hydro-Quebec Interconnection
La Grande Complex
James Bay, Quebec
Des Canton Converter Terminal
Sherbrooke, Quebec
Phase I Transmission Line - 450 KV DC
Built by Vermont Electric Transmission Co., Inc. and New England Electric Transmission Corp.
Phase I Comerford Station Converter Terminal - 690 MW
Monroe, NH
Built by New England Electric Transmission Corp.
Proposed Phase II Transmission Line - 450 KV DC
Proposed Phase II Sandy Pond Converter Terminal - 1800 MW
Ayer/Groton, MA

Dedication ceremonies were held in October at the Comerford Station Converter Terminal in Monroe, NH for the New England/Hydro-Quebec Interconnection, which has begun bringing Canadian hydroelectric power to New England.

Owners decide to scrap Seabrook-2, sell equipment

SEABROOK, NH—Owners of the Seabrook nuclear plant announced in November that the partially-completed Unit 2 will be scrapped.

New Hampshire Yankee said the owners have authorized management to begin the sale of all salvageable components and equipment from the unit.

In addition, New Hampshire Yankee said the 16 owners will be returning the unit's construction permit to the Nuclear Regulatory Commission.

Work on Unit 2 was 25 percent complete when it was halted in 1984. Since that time, the utility said funds have been spent only to preserve and protect the equipment and components. Approximately $800 million, including financing costs, have been spent on the unit.

Public Service Company of New Hampshire, which owns 35.6 percent of both Seabrook units, took a $300 million write-off for its investment in the unit earlier this year.

New Hampshire Yankee Senior Vice President William Derrickson said he expects electric utilities with plants similar to Seabrook will be interested in buying the components and equipment.

"Unit 2 equipment represents a substantial investment for our owners," he said, "and a realistic look at all of the option regarding Unit 2 has shown that the marketing of saleable equipment and components to be in the best interest of our owners, their ratepayers and investors."

Seabrook Unit 1, which is nearly finished but not licensed, is involved in controversy over its emergency evacuation plans.

Massachusetts Gov. Michael Dukakis has said the state will not participate in the development of an emergency response plan for the projects.

Despite that, New Hampshire Yankee President Edward A. Brown said he is confident the plant will be licensed.

Transmission access: Next major battle for utilities?

WASHINGTON—A DOE official has warned a joint utility/industrial customer group that transmission access may be the next major congressional battle for the electric utility industry. The official, Steven Herod, Director of the Office of Coal & Electricity Policy, said he was speaking as an individual, not a DOE official.

Herod told the Keystone Electricity Working Group, an organization made up of representatives of some of the nations largest electric and gas, pipeline, petroleum, chemical, mining, metals, automotive and manufacturing companies, consulting engineers and research organizations, that he envisions utility customers bringing pressures to bear on their congressional representatives to get them a way to shop for and buy power

Continued on page 19

News Briefs

JILL MINNER, Assistant Editor

Catawba lowest cost U.S. nuclear plant since '84: Duke Power

● Duke Power Co. reported that its Catawba nuclear station is the nation's lowest cost nuclear power plant to come into service since 1984. Warren H. Owen, executive vice president-engineering, construction and production group at Duke Power, attributes a large part of the success to a coordinated interdepartmental effort begun in 1982. He said the program enabled the company to reduce Catawba's projected cost of $1,703 per kilowatt to $1,560 per kilowatt. "At $1,560 per kilowatt, Catawba's cost is the lowest of the 19 nuclear plants that either have entered service since June 1984 or are scheduled to by June 1988—and about one-half the average," stated Owen.

'Watt busters' help NY Power Authority conserve energy

New York Power Authority Chairman Richard M. Flynn, center, joins the Watt Busters, specially-trained energy auditors, for the kickoff of an $800,000-energy conservation pilot program. The Power Authority and local electric departments are implementing the program to cut energy waste and consumer electric bills in the central New York communities of Skaneateles and Groton, according to the utility.

Philippines cancels only nuclear power plant, sells fuel

● The Philippines has announced it will cancel its only nuclear power plant and will put its uranium fuel, worth $250 million, up for sale, according to the Chicago Sun-Times. The $2.2 billion plant, built by Westinghouse, was delayed when Corazon C. Aquino took over in February. Intended to supply power to the main island of Luzon, the plant had caused controversy because it was located by a dormant volcano. Philippines Presidential press secretary Teodoro Benigno said that three parties had already put in offers to buy the uranium fuel, but that the government was still trying to obtain U.S consent to sell it.

TMI-1 shut down for refueling

● According to GPU Nuclear Corporation, Three Mile Island Unit 1 has been shut down for reactor refueling. The company said that while the unit is shut down, NRC-required modifications to its fire protection system will be completed and turbine maintenance work will be done. GPU Nuclear expects the outage to last for about five months and said it will involve over 1,000 workers. Refueling is scheduled to begin this month and be completed by the end of January, according to the company.

OG&E asks commission for a $50 million rate reduction

● Oklahoma Gas and Electric Co. (OG&E) requested a $50.2 million, or 5.2 percent, rate reduction from the Oklahoma Corporation Commission. The utility asked that the reduction be granted in two phases. Phase I, effective January 1, would be for $17.4 million, and Phase II, to be implemented July 1, would total $32.8 million. "Changing economic conditions, the new federal tax law and our own aggressive cost-saving activities have combined to make this rate reduction possible," said OG&E Chairman and President James G. Harlow, Jr.

Nine Mile-2 completes fuel load steps, receives NRC license

● Niagara Mohawk Power Corporation said it has met the final steps required for loading of uranium fuel at its Nine Mile Point Nuclear Unit Two. After installing and successfully testing four of the main steam isolation valves, the utility received a license from the Nuclear Regulatory Commission to operate at up to five percent power while systems are carefully tested. Niagara Mohawk Senior Vice President Charles V. Mangan said the fuel-load process would take approximately five weeks and that the company will then apply for a full power license.

Seabrook Unit 1 fuel load license authorized by NRC

● Public Service Company of New Hampshire has been granted a license, by the Nuclear Regulatory Commission (NRC), to load fuel into Unit 1 of its Seabrook Station and to conduct non-nuclear testing, according to NRC. Seabrook Units 1 and 2 will use pressurized water reactors, said NRC, and each will produce 1150 MW at full power. The commission reports that construction of Unit 2 has been delayed and no completion date has been set.

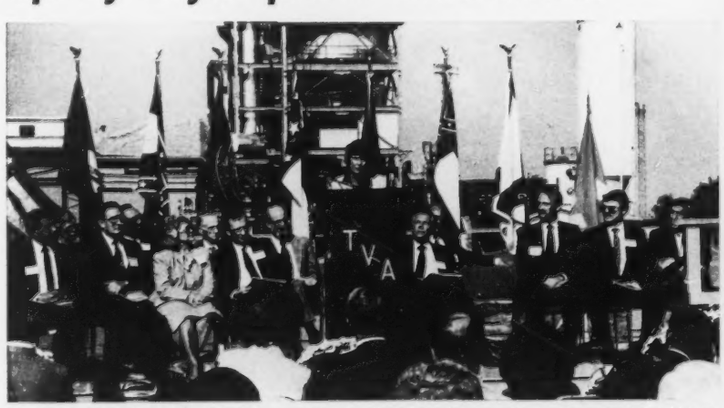
NRC issues operating license to Edison's Braidwood 1

● The Nuclear Regulatory Commission has issued an operating license to Unit 1 of Commonwealth Edison Co.'s Braidwood generating station, according to the utility. Edison said the license allows fuel to be loaded at Braidwood, which is expected to take several weeks, and conduct non-nuclear reactor tests. Issuance of the license followed a recommendation by the Atomic Safety and Licensing Board that Edison be allowed to load fuel at the site (see November *EL&P* page 2). A low power license is not expected until a decision is reached in the licensing hearings which, Edison hopes, will occur in January.

Detroit Edison division breaks safety record, receives award

● Detroit Edison has announced that the 280 employees in its Ann Arbor division recently reached a company safety record by working over 1 million hours without a disabling injury. As a result, the division received the Edison Electric Institute's Safety Achievement Award. "No other Detroit Edison division has ever achieved a safety record of this magnitude...in only two years our division has realized the best safety-record improvement in the company."

Spray dryer plant dedicated



A 10 MW spray dryer/electrostatic precipitator pilot plant that promises clean burning of high-sulfur, eastern U.S. coal was dedicated Oct. 17 at the TVA Shawnee Fossil Plant near Paducah, Kentucky. Sponsors of the project include TVA, the Electric Power Research Institute, the Commonwealth of Kentucky and Ontario Hydro. Officials from all the organizations took part in the ceremonies, including Kentucky Gov. Martha Collins (at lecturn). TVA Manager of Power Robert C. Steffy, Jr., said, "The SD/ESP process appears to offer economic and operational advantages for retrofitting on systems like TVA fossil plants that burn medium- and high-sulfur coal. The test will be conducted over a three year period.

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EL&P readers whose responsibilities include both Generation and Transmission/Distribution receive both technology sections. Other readers receive the technology section that applies to their respective area of responsibility. The Generation edition is indicated by a single dot (•) in the upper right corner of page 1, the T/D edition carries two dots (••). All readers receive EL&P's industry news section.

Bull Run ranked most efficient . . . from page 1

cycle plants. No nuclear plants were included because of the variability among utilities in reporting fuel consumption and heat content of nuclear fuel.

Least expensive producer

Every year since 1981 and again in 1985 West Texas Utilities Company's Rio Pecos gas-fired plant has been the least expensive producer of electricity. The second, third and fourth plants on the list—Union Electric's Callaway 1, Virginia Power's North Anna and Niagara Mohawk's Nine Mile Point 1—are all nuclear. Rounding out the top ten are three coal plants and three more nuclear plants. On average, noted UDI, 15 of the top 25 plant's in the group's annual rankings of variable production costs over the last five years have been nuclear-fueled.

Of the top 100 plants that generated the least expensive electricity, 67 are coal-fired, 31 are nuclear and 2 are gas-fired. No oil-fired plants made the list.

Of the 672 total plants, the 60 nuclear plants had the lowest average production expense at $18.67 per MWHr. Next came the 402 coal stations at $22.60 per MWHr, the 152 gas-fired plants at $42.33 per MWHr, and the 51 oil-fired plants at $52.82 per MWHr. The seven units using "other" fuels had average expenses of $44.52 per MWHr. Average oil and gas production expenses declined slightly from 1984 levels, while the others increased.

Lowest fuel expense

Nuclear units came in with the lowest average fuel expense at $7.51 per MWHr, while the oil-fired plants had the highest at $46.38 per MWHr.

UDI said average production expenses for the entire group were $25.39 per net MWHr and average fuel expenses were $19.72 per net MWHr.

Also in the report is a comparison of 1984 and 1985 expenses for a selected group of large steam electric plants.

According to the report, utilities spent more than $53 billion in 1985 to operate and maintain the 672 plants. Of that total, UDI said $41.3 billion can be attributed to fuel costs.

For more information

For more information on the report, contact UDI at (202) 466-3660.

UDI is a private, not-for-profit information services company located in Washington, D.C., which has tracked and computerized capital and operating expenses for utilities and their power plants since 1981.

TOP 20 U.S. STEAM ELECTRIC PLANTS IN 1985 RANKED BY BTU PER KILOWATT HOUR

No.	Plant or unit	Heat rate (Btu/kWhr)	Operator	Primary fuel type	1985 installed capacity	1985 net generation (MWHrs)
1	Bull Run	8900	Tennessee Valley Auth.	Coal	950	5,292,978
2	Stonybrook	9023	Mass. Muni. Whsl. Elec. Co.	CCYC	359	794,040
3	Marshall (NC)	9051	Duke Power Co.	Coal	1,996	9,168,595
4	Belews Creek	9067	Duke Power Co.	Coal	2,160	11,472,489
5	JH Campbell	9246	Consumers Power Co.	Coal	1,420	8,663,179
6	Crystal River 4&5	9263	Florida Power Corp.	Coal	1,479	8,573,324
7	McMeekin	9357	South Carolina Elec. & Gas	Coal	294	1,689,012
8	Gallatin	9380	Tennessee Valley Auth.	Coal	1,255	6,948,174
9	Amos	9382	Appalachian Power Co.	Coal	2,933	17,320,017
10	Bay Shore	9402	Toledo Edison Co.	Coal	639	3,794,644
11	Morgantown	9416	Potomac Electric Power Co.	Coal	1,252	5,405,124
12	Clinch River	9450	Appalachian Power Co.	Coal	713	3,810,499
13	Milliken	9462	New York State Elec. & Gas	Coal	316	1,732,889
14	Somerset 1	9473	New York State Elec. & Gas	Coal	655	4,736,214
15	John Sevier	9480	Tennessee Valley Auth.	Coal	800	5,260,647
16	Philip Sporn	9487	Central Operating Co.	Coal	1,106	4,182,309
17	Coleto Creek	9496	Central Power & Light Co.	Coal	600	4,002,559
18	Mountaineer	9512	Appalachian Power Co.	Coal	1,300	7,073,740
19	Muskingum River	9543	Ohio Power Co.	Coal	1,530	7,298,746
20	Monroe (MI)	9555	Detroit Edison Co.	Coal	3,280	19,810,292

Source: "1985 Production Costs, Operating Steam Electric Plants," Utility Data Institute.

TOP 20 U.S. STEAM ELECTRIC PLANTS IN 1985 RANKED BY AVERAGE EXPENSES (INCLUDING FUEL) PER NET MEGAWATT HOUR

No.	Plant or unit	Average expenses/ net MWHr	Operator	Primary fuel type	1985 installed capacity	1985 net generation (MWHrs)
1	Rio Pecos	4.51	West Texas Utilities Co.	Gas	142	1,023,429
2	Callaway 1	7.85	Union Electric Co.	UR	1,236	8,029,574
3	North Anna	9.56	Virginia Elec. & Power Co.	UR	1,959	12,612,515
4	Nine Mile Point	9.75	Niagara Mohawk Pwr. Corp.	UR	642	4,932,333
5	Hayden	10.58	Colorado-Ute Elec. Assn.	Coal	465	3,117,627
6	MR Young	10.86	Minnkota Power Coop.	Coal	682	4,021,000
7	Laramie River	11.69	Basin Electric Power Coop.	Coal	1,710	9,516,334
8	Monticello	11.77	Northern States Power Co.	UR	569	4,288,986
9	Point Beach	12.23	Wisconsin Elec. Power Co.	UR	1,048	6,955,765
10	Quad Cities	12.43	Commonwealth Edison Co.	UR	1,657	10,829,185
11	Prairie Island	12.54	Northern States Power Co.	UR	1,186	7,285,484
12	Trojan	12.55	Portland General Elec. Co.	UR	1,216	8,910,774
13	Wolf Creek 1	12.56	Kansas Gas & Elec. Co.	UR	1,236	2,942,100
14	Surry	12.61	Virginia Elec. & Power Co.	UR	1,695	9,690,725
15	Monticello (TX)	13.04	Texas Utilities Elec. Co.	Coal	1,980	13,159,790
16	Colstrip	13.04	Montana Power Co.	Coal	1,495	7,510,602
17	Zion	13.32	Commonwealth Edison Co.	UR	2,196	9,927,984
18	Maine Yankee	13.34	Maine Yankee Atomic Pwr.	UR	864	5,354,407
19	Pirkey 1	13.41	Southwestern Elec. Pwr. Co.	Coal	640	3,002,549
20	Calvert Cliffs	13.61	Baltimore Gas & Elec. Co.	UR	1,828	9,925,994

Source: "1985 Production Costs, Operating Steam Electric Plants," Utility Data Institute.

WEPCO forms holding company

MILWAUKEE—Wisconsin Electric Power Co. shareholders voted October 29 to reorganize into a holding company called Wisconsin Energy Corporation.

The company will create new nonutility subsidiaries aimed at increased emphasis on economic development programs.

Approval must be granted by the Securities and Exchange Commission before the change can take effect. WEPCO said it hopes to gain approval before year's end.

"Today's action puts us only one step away from a new organization that we believe can make a major contribution to economic development in our state," said Chairman Charles McNeer.

Under the new plan, Wisconsin Energy Corp. would become the parent company of Wisconsin Electric, Wisconsin Natural Gas Co., and several nonutility subsidiaries.

"These nonutility subsidiaries will be a logical extension of our recent economic development efforts," said McNeer. "While we plan to move slowly, we anticipate that these ventures will mean new jobs in our service area, an increased tax base and a stronger economy over the next decade."

He emphasized that the electric and natural gas subsidiaries will continue to be the top priority and key businesses for the company.

Said McNeer, "The utility industry has changed and we expect that trend to accelerate in the next decade with increasing competition, development of new technology and changing regulatory requirements. It will be a time of great opportunity and exciting challenges."

Regulator warns colleagues not to be overzealous in protecting the public

LAS VEGAS—Utility regulators need to watch their tendency to be overzealous in protecting the public, according to a Wisconsin Public Service Commission member.

Branko Terzic, who has served as a commissioner since 1981, said utility regulation can be too profit conscious.

"I am coming more and more to the conclusion that we are not taking advantage of the best of the American spirit of competition and free enterprise in many regards," he noted at an October seminar on regulation sponsored by the Utility Shareholders Association of Nevada.

Regulators at risk

Regulators are at risk, said Terzic, if they pay too much attention to limiting utility profits and not enough attention to the cost involved in providing utility services.

"We end up with a real disincentive for innovation, for managerial efficiency," he stated.

When utilities operate efficiently with rate caps, Terzic said that regulators give them no incentive to keep being efficient. In fact, he noted, it becomes a disincentive to become innovative and lower costs.

"I am firmly of the opinion that citizens would rather pay an $80 bill with a 23 percent return on equity than a $100 bill with a 12 percent return on equity," said Terzic.

The future key will be to find some mechanisms which will allow costs to come down and at the same time, stated the regulator, allow managers and shareholders to share the-benefits of improved efficiencies.

He admitted that regulators have a hard time determining cost factors involved in providing service.

"We do, however, do a much better job at regulating the rates of return and opportunity for that return," he said. "Out of a $100 utility bill, about $2 or $3 is returned and most commissions will spend 80 percent of their time discussing the return figure rather than the cost figures."

Acid rain legislation poses threat to clean coal technologies

ST. LOUIS—New clean coal technologies are threatened by the possibility of acid rain legislation.

National Coal Association President Carl H. Bagge told delegates to the first International Clean Coal Technology here in October that the forced reduction of SO_2 emissions and mandatory scrubbing would not bring about a corresponding reduction in acid rain.

Instead, Bagge said, "It would prevent the wide commercial application of the clean coal technologies, which are more economic in capitalization and construction because they can be built in increments closely paralleling the need."

The emerging coal combustion technologies are more efficient than scrubbers because they do not drain off significant amounts of electricity to power controls, he said.

"And because they offer more Btu's for the buck, and more kilowatts for the Btu's, they will contribute to general economic strength," noted the NCA president. "If emissions are really the concern, new technologies are cleaner than things that an acid rain law would force in their place."

Bagge told the conference attendees that clean coal technology needs only a push to foster development. Because of the new technologies, he said that electric generation is poised at the frontier of a new era.

Some of that impetus is already coming from the states, pointed out Bagge. "Some of them are hard pressed, and it is significant they are putting up half of the required clean coal investment. They have given the probabilities a hard-eyed assessment and they are applying the nudge."

Aluminum industry troubles may affect NW economy, ratepayers

RICHLAND, WA—The results of a recent study, conducted for the Bonneville Power Administration (BPA), found that financial troubles facing the aluminum industry may severely affect segments of the Northwest economy and electricity ratepayers.

According to Battelle Memorial Institute, the Northwest economy could lose more than 30,000 jobs and $136 million in annual tax revenues if the aluminum industry's problems cause the shutdown of the region's remaining smelters.

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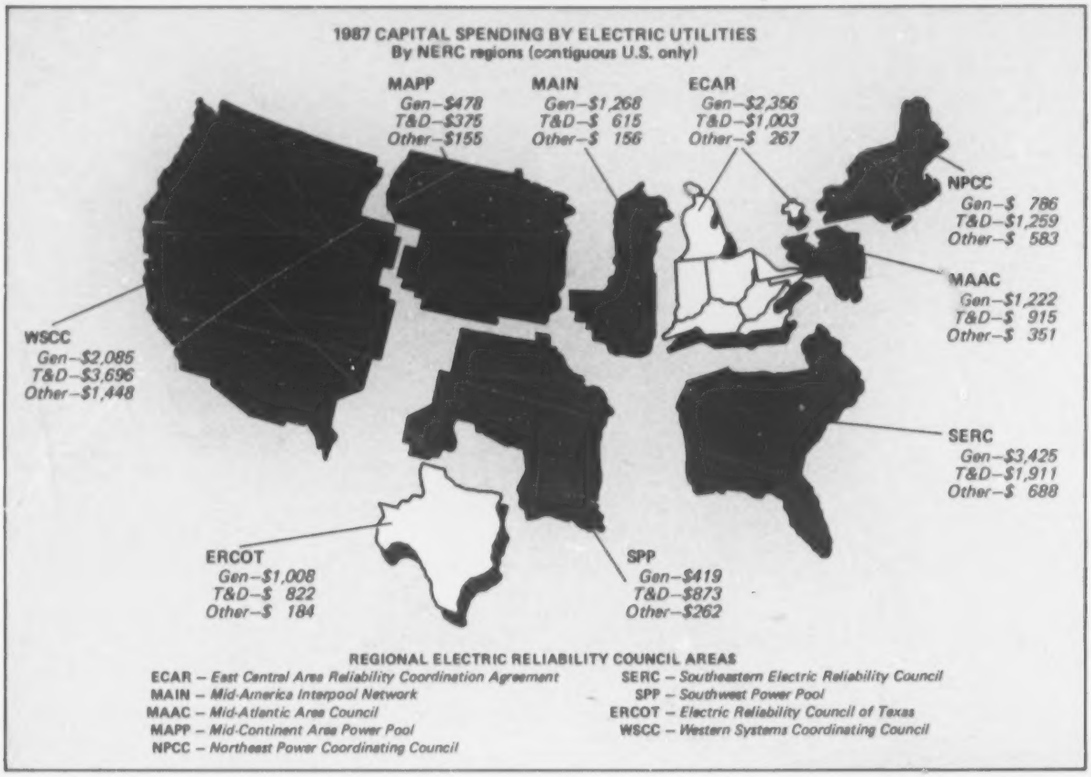
Electric utilities increase capital spending programs



BARRINGTON, IL— Utilities will spend $28.6-billion for new and upgraded facilities in 1987. While this represents a $2.1-billion decrease from estimated 1986 capital expenditures of about $30.7 billion, it is nearly $2-billion more than projected for 1987 just a year ago.

For the five years 1987-1991, total capital expenditure are projected at $125-billion.

For 1987, generation spending will total $13-billion, transmission and distribution investment will run $11.5 billion and other spending will total $4.1-billion.

The full 1987 capital spending survey report begins on page 11

According to *EL&P*'s 1987 projections, generation investment will drop to $51-billion for the five years, $12 million less than called for in last year's forecast. Transmission and distribution expenditures, are projected to be $55.4-billion for the 1987-1991 period, up from $53.9-billion for the 1986-1990 period. Other capital expenditures are estimated at $18.5-billion, $13-billion up from the previous five-year forecast.

The study also revealed that only one in five utilities is actually involved in carrying out life extension work, although a number are involved in studying potential projects.

North American winter peak demands expected to increase

PRINCETON, NJ—North American winter peak electricity demands are expected to increase moderately over last year's demands, according to a new forecast from the North American Electric Reliability Council.

However, said NERC, utilities will have enough electricity to meet those demands.

Expected to exceed

Winter peak demands are expected to exceed last year's by 3.3 percent in the U.S., 2.5 percent in Canada, and 4.8 percent in Mexico. (See table.)

ECAR	3.3
ERCOT	8.5
MAAC	3.4
MAIN	0.2
MAPP-U.S.	7.9
NPCC-U.S.	2.4
SERC	-3.7
SPP	1.3
WSCC-U.S.	4.1
NERC-U.S.	3.3

Source: NERC Winter Assessment (86-87)

NERC compiled its forecasts from projections made by North American electric utilities.

The highest forecast increase of 8.5 percent is expected in the ERCOT region, which includes most of Texas.

"In several areas," noted NERC in its *Winter Assessment* report, "the transmission system will continue to be loaded up to its reliability limits by transfers of lower cost electricity."

NERC reports that the most critical limitations will occur in the central to eastern areas of Pennsylvania, in the Southwestern U.S. from Arizona to southern California, and in portions of the Southwest Power Pool and the Southeastern Electric Reliability Council.

Among specific areas of the country, NERC said it appears that the Tennessee Valley Authority will go through the winter with no nuclear plants on line, causing capacity margins to be lower than desired.

The council said transfer capabilities will be increased between the SERC and MAAC regions when a new section of the 500-kV Baltimore-Washington loop is completed in the near future.

Also, some transmission limitations are possible in the Rocky Mountain Power Area.

Four major generating units, total-

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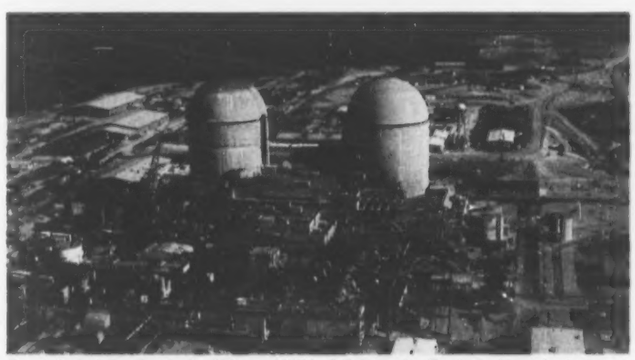

Operation of the first unit of Texas Utilities' Comanche Peak nuclear plant was recently pushed back to early 1989, causing the plant's total cost estimate to increase by approximately $2 billion.

Comanche Peak plant delayed; cost increases to $6.7 billion

DALLAS—Texas Utilities Electric Company (TUEC) delayed the start-up of its Comanche Peak nuclear plant and increased its most recent cost estimate by about $2 billion.

Unit 1 of the plant is expected to be in operation in early 1989. Unit 2 will not be ready for commercial operation until after the summer of 1989, said the company. The previous estimate, announced in November 1985, assumed Unit 1 would start-up in mid-1987 and Unit 2 six months later.

In addition, the company said the plant's cost estimate rose to $6.70 billion or $3,300 per kilowatt, from its previous estimate of $4.64 billion or $2,297 per kW.

Moody's Investors Service said it was reviewing TUEC's debt and preferred stock ratings for possible downgrade. It noted that a cost increase announcement from the utility was expected, but the size of the increase was not.

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News Briefs

JILL MINNER, Assistant Editor

OR voters defeat proposal prohibiting nuclear plant operation

● In the November election, Oregon voters defeated by a 2-to-1 margin a proposal that would have prohibited the operation of any nuclear plant in the state until a permanent federal high-level nuclear waste site is completed. If passed, Measure 14 would have forced Portland General Electric to close its Trojan nuclear plant by Dec. 4. A citizen's group against the proposition raised more than $700,000 to defeat the measure. According to *The Wall Street Journal*, PGE contributed $661,000 of the total amount collected.

Alabama Power markets appliances for blind, handicapped

● Alabama Power Company is now marketing home appliances for the blind and physically impaired. According to the company, the appliances, designed by Whirlpool Corp., feature braille overlays, oversize knobs and large-print graphics along with instruction booklets in braille and on audio cassettes. "This is a major effort to reach customers with physical handicaps—ranging from blindness to arthritis and related limitations," stated Alabama Power Vice President of Marketing Sam H. Booker, "These appliances offer an efficient answer to a very practical problem faced by many customers."

Puget Power maps owls living near small hydro project sites

● Puget Sound Power & Light Company Environmental Scientist Mel Walters, uses a radio receiver to home in on a spotted owl that lives near the site of several proposed small hydroelectric projects. The licensing process for the hydro projects requires an environmental review of the area. As part of the review, Puget Power has been mapping the habitat of a pair of spotted owls for the past three years in the Baker River Basin in northwest Washington state. The owls were captured earlier and fitted with tiny radio transmitters. Only about 600 spotted owls, which live in old-growth forests, survive in Washington state. As of December, four of Puget Power's license applications were pending, one was surrendered and one permit was surrendered, according to the company.

WP&L seeks PSC approval to form holding company

● Wisconsin Power & Light Company (WP&L) said it is awaiting approval from the Public Service Commission of Wisconsin on its request to form a holding company. Under the proposal WP&L will be a subsidiary of the holding company. "A holding company structure provides for the separation of utility and non-utility operations and allows the flexibility to operate in non-traditional, competitive arenas," said WP&L CEO James Underkofler. "We will, however, continue to focus on the utility operation as our primary business," he added. Underkofler noted that shareowner approval for the reorganization will be sought at the utility's annual meeting in April and anticipates that the holding company will be in operation by the end of July.

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EL&P readers whose responsibilities include both Generation and Transmission/Distribution receive both technology sections. Other readers receive the technology section that applies to their respective area of responsibility. The Generation edition is indicated by a single dot (•) in the upper right corner of page 1; the T/D edition carries two dots (••). All readers receive EL&P's industry news section.

GPU notifies NRC of progress in TMI-2 plans

● GPU Nuclear Corporation said it recently notified the U.S. Nuclear Regulatory Commission of its plans for completion of the cleanup program at Three Mile Island Unit 2. The company said the plant will be in Post-Defueling Monitored Storage (PDMS) at the end of the program, which should be completed in approximately two years at a cost of about $1 billion. TMI-2 Director Frank Standerfer said the plant will eventually pose no risk to the health or safety of the public. "Many of the cleanup challenges already have been met successfully. And while today there still is much work to be done, the cleanup program is making good progress toward completion. The primary goal of the program has been to establish a safe, stable and secure facility," he said. Defueling at the plant, now underway, will remove about 100 metric tons of damaged fuel and 50 metric tons of damaged internal components that will be shipped from the site. The utility said a small amount of fuel will remain at various locations in the plant, mostly in enclosed systems.

Edison's Byron 2 receives operating license from NRC

● According to Commonwealth Edison, Unit 2 of its Byron generating station has been granted an operating license by the Nuclear Regulatory Commission. The license allows Edison to start loading fuel at Unit 2. When loading is completed, low power testing will begin and power levels will be increased to five percent capacity after successful lower level performance, stated the utility. Edison expects the unit to be at full power by next summer.

PSNH declines to appeal PUC's decision on Pilgrim Two

● Public Service of New Hampshire (PSNH) said it has decided not to appeal the New Hampshire Public Utilities Commission's decision denying the company's request to recover its $16 million investment in the canceled Pilgrim Two power plant. "We want our customers to know that we are totally committed to our...proposal to keep electricity prices down," stated PSNH President and CEO Robert J. Harrison. PSNH had been pursuing recovery of its Pilgrim Two investment through a test, before the New Hampshire Supreme Court, of the constitutionality of the state's anti-CWIP law. The law had earlier been found, on other grounds, to bar any recovery for abandoned/canceled plants, according to the utility.

Three utilities honored for environmental conservation efforts

● The National Institute for Urban Wildlife presented three investor-owned electric utilities with its "Outstanding Industry Conservation Award", for their "significant contributions to environmental conservation." Baltimore Gas & Electric Co. was recognized for operations at its Crane Aquaculture Facility, Carolina Power & Light Co. was commended for its management of the land around the Shearson Harris nuclear power plant, and Potomac Electric Power Co. was cited for its wildlife management program at the Chalk Point Power generating station. This marks the first time electric utilities have received the conservation award, according to the institute.

Virginia Power wins DOE award for solar energy project

● Virginia Power's solar energy project received an award from the Department of Energy's National Program for Energy Innovation. The 60-kW solar photovoltaic project is currently generating electricity at the utility's North Anna Power Station. "This award recognizes our company's commitment to explore advanced technologies," said Virginia Power Senior Vice President of Corporate Technical Assessment Sam Brown, "Someday these sources may provide us more efficient use of less costly energy."

PP&L requests a $32 million rate reduction

● Pennsylvania Power & Light Company (PP&L) has proposed a $32 million decrease in its electricity rates, according to the utility. If the request is approved by the Pennsylvania Public Utility Commission, PP&L said its customer charges would fall by an average 1.8 percent. The company sites lower federal income taxes, changes in the state tax surcharge and an increase in the Energy Cost Rate as reasons for the request.

NARUC elects officers at annual convention

● The National Association of Regulatory Utility Commissioners (NARUC) elected officers at its 98th annual convention in Phoenix, AZ. Peter Bradford, chairman of the Maine Public Utilities Commission, was chosen as president and North Dakota Commissioner Bruce Hagen was named as 1st vice president and chair of the executive committee. Appointed 2nd vice president was South Carolina Public Service Commissioner Henry Yonce and Paul Rodgers was elected to his 22nd term as administrative director and general counsel of the NARUC.

Westinghouse relocates combustion turbine unit

● Westinghouse Electric Corporation recently announced plans to relocate its combustion turbine operations from Concordville, PA to Orlando, FL. Energy Systems Executive Vice President Theodore Stern said the transfer will take place over a six- to nine-month period. He said a severely depressed world market, increased global competition, and financial losses have adversely affected the combustion turbine business over the past few years. "Consolidation of our combustion and steam turbine activities provides a much broader base of technical skills and personnel to support our customers with their power generation needs," he said. A number of the 230 Concordville personnel will be transferred to the Orlando generation technology systems division.

Editorial

1987: A happier, better year!

Forecasts of capital expansion and upgrading in 1987 remain something less than bright for suppliers to the electric utility industry. The simple fact is that the industry's capital spending plans indicate another year of decreased spending, down about 7 per cent from 1986, which wasn't a year to write home about itself. But there are areas of encouragement...if one looks far enough.

The first plus is that the forecast for 1987 capital investment is about 6.5 percent above the '87 forecast made a year ago. Moreover, after the strong financial performance most electric utilities recorded in 1986, more utilities stand in a good position to live up to their projections and plans.

The second plus is that both transmission and distribution spending projections are up, both in relation to what was projected for last year and for this. Manufacturers of T&D equipment and apparatus should enjoy a solidly improved year in 1987. With interest rates at their lowest levels in a number of years and housing starts continuing strong, distribution system construction seems sure to remain active. And with increasingly heavier loadings for economy interchanges on a regular basis, transmission tielines will have less and less capacity for emergency backup. That means new transmission lines will be required in the near-term and projects will have to be engineered and started this year.

Although new generation investment in 1987 will decline, both in total dollars and as a proportion of total spending, there are a couple of bright spots. Major hydro projects subject to federal relicensing will need to be at least partially re-engineered to meet current federal requirements. Some may need substantial facilities improvements, beginning this year. And more and more utilities are becoming involved in life extension programs, beginning with economic and engineering studies, but then moving to the implementation stage.

And more utilities are investing capital in new ventures and diversified operations. With construction budgets now at managable levels, and improved cash flows, many utilities will move more actively to find financially attractive diversifications to help pad the return on shareholder investment.

Thus, for most of the industry—utilities, architect/engineers and manufacturers—1987 should be a better year than we've had for quite a while.

To our electric utility readers, we wish you a year with no big surprises... moderate, but steady load growth with no storm-blown or heat-seared outages and no adverse regulatory decisions. For our regulatory agency readers, we wish you perception, persistence and patience to seek and arrive at decisions that will favor no special interests, but be totally fair to all. And to our supplier and advertiser friends and associates, we join with you in hoping for a better year, when the logic of utilities' realistic needs for new and improved system operations will be translated into orders for new equipment and where all the segments of the industry can once again work together, day by day, to build and rebuild the systems that will be needed to meet the demands of an increasingly electrified future.

Finally, to all we can wish you no greater blessing than that 1987 be a year of personal progress, good health, happiness and ....peace!

Asbestos-removal workshop set

BARRINGTON, IL—A special workshop probing the asbestos-removal requirements of electric utilities—and how to meet them—will be conducted February 10-11 at the Indian Lakes Resort, Bloomingdale, IL. The session, which is sponsored by the School of Public Health of the University of Illinois, will feature speakers from the Environmenal Protection Agency, contractors and utilities, as well as public health specialists from the University. There will be no fee for the workshop.

Goal of workshop

According to Dr. John J. Gammuto, who is organizing the workshop, the goal of the workshop is to maximize the dialog between participants, focusing on the specific operational requirements of utilities that prevent asbestos-removal methods considered standard for commercial and public buildings from being employed. "Ultimately, as an outgrowth of the workshop exchange" he said, "we would hope to develop a training program for utilities aimed at showing them just how to remove asbestos from power plants safely, legally and economically, without affecting plant operations."

Interested readers may obtain more information by phoning either Dr. Gammuto at (312) 969-59595 or Ms. LaWanda Tucker at the University of Illinois, (312) 996-5762.

'86 utility financings more than doubled

NEW YORK—Investor-owned utilities financings rose to $28-billion in the first nine months of 1986, more than double the amount for the same period in 1985. Electric utilities, according to Ebasco Business Consulting Co., were responsible for $17.4-billion of this amount, which reflects an increase of 78 percent from the same period a year earlier.

The majority of financing activity, representing 93 percent of total security offerings in the period, was in the form of long-term debt, which rose by 135 percent to $26.1-billion. Electric utilities' share of this total was 60 percent.

Sales of preferred stocks increased in the period, while common stock sales declined.

Of the total $28-billion financing, 70 percent, or $19.6-billion, was through negotiated sales, while 27 percent was via competitive bidding and 3 percent was sold privately.

About 59 percent of the money raised, amounting to $16.4-billion, was used for refunding.

SECURITY OFFERINGS—1/1-9/30

	1986		1985	
	Total	Electric	Total	Electric
Long-term Debt:				
Offered Publicly	25,204,650	15,209,650	10,876,305	7,903,805
Offered Through Subscription	0	0	0	0
Offered Privately	864,000	441,500	241,582	191,582
Preferred Stock:				
Offered Publicly	1,183,000	1,183,000	445,000	445,000
Offered Through Subscription	0	0	0	0
Offered Privately	0	0	0	0
Common Stock:				
Offered Publicly	762,695	531,945	1,790,0971	1,218,196
Offered Through Subscription	0	0	0 0	
TOTAL FINANCING	28,014,345	17,366,095	13,353,858	9,821,583
Purpose				
Total Refunding	16,460,562	9,227,280	3,495,395	2,016,885
Total New Money	11,553,783	8.138,815	9,858,463	7,804,698
Type of Financing				
Competitive	7,559,964	4,843,245	1,9935,685	1,385,685
Negotiated	19,590,381	12,081,350	11,176,591	8,244,316
Subscription	0	0	0	0
Private Sale	864,000	441,500	241,582	191,582

Directors consider resigning, says survey

NEW YORK—One-third of the over 1100 directors of major U.S. corporations responding to a recent survey say that the increased liability to which they are exposed has caused them to consider resigning from their board positions.

The Touche Ross survey also found that the longer directors serve on boards, the more likely they are to consider resigning for this reason.

Increased liability will also make it more difficult to keep boardrooms full in the future, said survey respondents. Ninety-three percent of the directors polled believe that increased liability will make it more difficult to recruit talented, experienced people to serve on boards.

Intense concern

Richard H. Murray, general counsel for Touche Ross said, "The frequency and quality of responses to the survey are dramatic evidence of the intense concern directors have about the changing demands of corporate stewardship and the uncertainties which increase their burdens."

Almost one-third of the directors think the bankruptcy rate for companies with sales of $1 billion or more will increase in the coming year. They said the industries most vulnerable are energy, banking and steel.

Most optimistic

Directors living in the Southeast and the Middle Atlantic states are the most optimistic about the U.S. economy, with most saying the economy is growing slowly. Those living in the Southwest and the Rocky Mountain areas are more likely to describe the economy as stagnant.

For copies of the survey, *Issues Facing U.S. Corporate Directors*, write or call Mary Abdo, Touche Ross, 1633 Broadway, New York, NY 10019 (212) 489-1600.

Electric Light & Power

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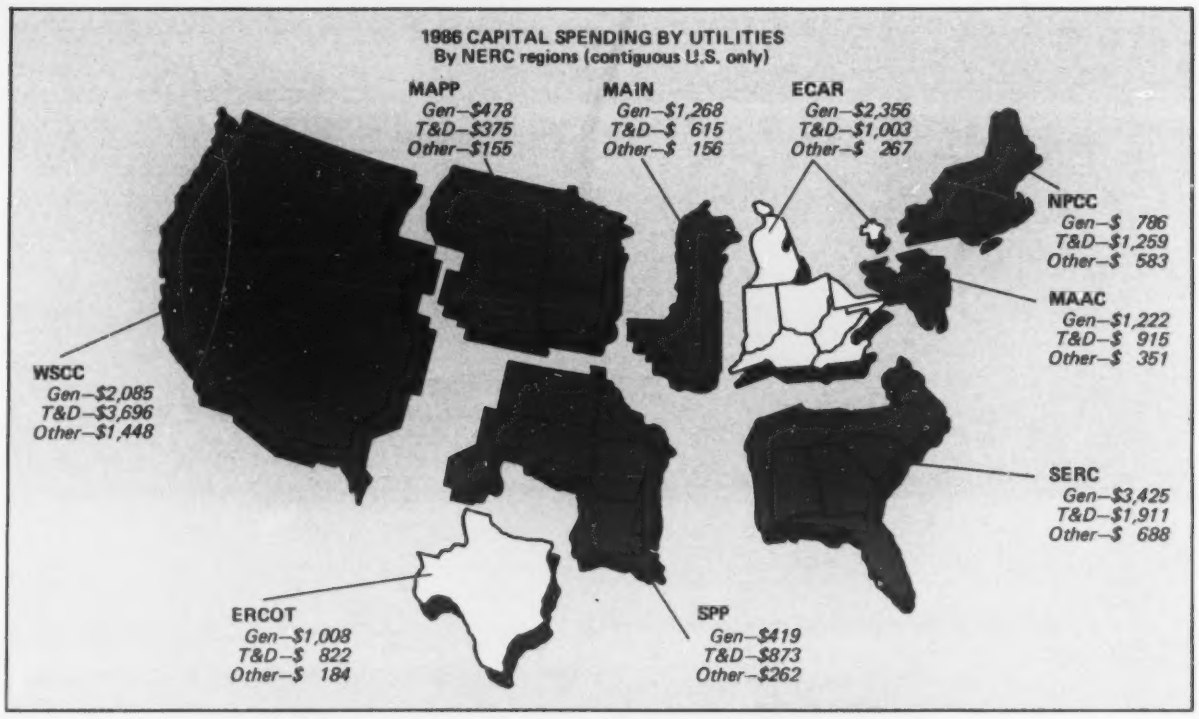

1987 capital spending survey report

Electric utilities to spend $28.6-billion in '87, reductions in 5-year spending plans decline

Robert A. Lincicome, Editor in Chief

Capital spending by U.S. utilities—investor-owned, federal, district, co-op and municipal—will invest $28.6-billion in new and upgraded facilities in 1987. While representing a decrease from 1986 spending, the new projection reflects an increase in utility spending plans for the year from projections made a year ago.

And for the five year period, capital spending plans reflect a similar strengthening. The five-year total is $125-billion.

These projections were based on *Electric Light & Power's* most recent annual survey of electric utilities. The survey was completed in November, 1986.

The degree of improvement can be seen easiest by looking at the years 1987-1990, which were covered on both last year's and this year's studies. Last year's projections for those four years showed capital spending plans totalling $92.1-billion. For those same four years, this year's study indicates that utilities will invest $103.7-billion. This represents a gain of $11.6-billion or 7.9 percent. It breaks down to an average increase of more than $2.8-billion per year.

As might be expected, the current study pointed up the continuing decline in spending for generation additions, reflecting the current over-capacity and low load growth prevailing in the industry. It also shows a strengthening in transmission and distribution system expansion and upgrading, although specified substation investment is off from the previous forecast period.

Substantial increase

This year's study also showed a substantial increase in capital investment in the "other" catagory. This development reflects a basic change in the prevailing pattern of spending over the past decade and is an indication of many utilities' programs of diversification and spending for non-operating system facilities.

NORTH AMERICAN ELECTRIC RELIABILITY COUNCILS	
ECAR	East Central Area Reliability Coordination Area
ERCOT	Electric Reliability Council of Texas
MAAC	Mid-Atlantic Area Council
MAIN	Mid-America Interpool Network
MAPP	Mid-Continent Area Power Pool
NPCC	Northeast Power Coordinating Council
SERC	Southeastern Electric Reliability Council
SPP	Southwest Power Pool
WSCC	Western Systems Coordinating Council

1987 CAPITAL SPENDING BY NERC REGION (CONTIGUOUS U.S. ONLY)
(in millions)

Region	Generation	Substation	Transmission	Distribution	Other	Total
ECAR	$ 2,356	$ 63	$ 230	$ 712	$ 267	$ 3,626
ERCOT	1,008	6	250	566	184	2,014
MAAC	1,229	285	108	521	351	2,488
MAIN	1,268	63	189	362	156	2,039
MAPP	478	54	87	234	155	1,008
NPCC	786	257	268	734	583	2,628
SERC	3,425	168	543	1,200	688	6,024
SPP	419	60	264	548	262	1,554
WSCC	2,085	434	941	2,321	1,448	7,229
Total	$13,047	$1,391	$2,880	$7,198	$4,094	$28,610

CHANGING INVESTMENT PATTERN
1987 - 1991

	1987	1988	1989	1990	1991
Generation	45.6%	41.9%	39.8%	38.4%	36.9%
T&D	40.1%	43.5%	45.8%	46.7%	46.9%
Other	14.3%	14.6%	14.4%	14.9%	16.2%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

The electric utility industry plans to spend some $28.6 billion for new and upgraded facilities in 1987. While this reflects a decrease from projected capital spending of $30.7-billion in 1986, it nevertheless represents a 6.5 percent increase in spending plans for the year as projected a year ago. Actual 1986 spending figures will not be available until later this year.

The improvement over earlier projections of 1987 capital spending plans reflects the continuing excess generation capacity that developed over the past five or six years, plus increased spending for power delivery and other system facilities and resources.

According to projections made on the basis of returns to *EL&P's* capital spending plan survey, electric utilities will invest $13.05-billion in generation facilities in 1987. This will be 7 percent less than planned a year ago for 1987 projects and a decline of 24 percent from projected expenditures in 1986. This cutback in generation spending reflects the excess reserve margins that continue to plague utilities in the face of lower-than-expected load growth.

Bulk of spending

The bulk of generation spending will be devoted to projects currently in-process and to an increasing number of life extension and upgrading projects.

Although about 35 percent of the nation's major utility organizations report they are involved with life extension projects, the majority are still in the "study" stage. Life extension projects could represent a growing share of capital investment in power generation over time. However, at the present time there still is a lot more looking and talking about life extension than there is real work. Responses to *EL&P's* survey indicate this situation will change gradually over time.

Spending for power delivery facilities is projected at $11.5-billion in 1987. This is made up as follows: substation construction—$1.39-billion, transmission construction—$2.88-billion, and distribution construction—7.20-billion.

It should be noted that although total capital expenditures in 1987 are substantially lower than projected actual spending in 1986, this is not true for transmission and distribution. Both catagories of projects are up from 1986 by about $250-million.

Continued on page 12

Capital spending report . . . from page 11

Substation construction programs, however, will be smaller in 1987 than in 1986. Overall, however, power delivery programs will represent 40.1 percent of total capital spending, up from 38.4 percent in 1986.

Overlapping

Substation capital investment is understated by an unknown amount. A number of utilities replying to *EL&P's* survey request included substation construction and investment in either transmission or distribution spending plans (or both). Similarly, capital programs for transmission and distribution tend to be overstated. Because of this overlapping, the three catagories of spending are grouped in subsequent discussion and the over-and under-statements cancel each other out.

Miscellaneous capital spending programs continue to increase and in 1987 will total almost $4.1-billion. This catagory of capital investment has run around 5 percent of total capital spending in the past, but reflects a gain of more than 100 percent in 1987 and is projected to run in excess of 14 percent of total capaital spending over the five-year period.

1988-1991 capital spending

Spending for generation facilities is expected to continue downward over the remaining four years of the survey period, falling to $11.3 billion in 1988, $9.6-billion in '89, $9.1-billion in '90 and, ultimately, $7.9-billion in 1991. As a percentage of total capital spending, generation investment will drop to about 42 percent in 1988 and continue slipping until it hits about 37 percent in 1991.

Conversely, capital investment in power delivery facilities should continue relatively strong, in excess of $11-billion, until 1991, when it could fall to just under $10-billion. It is projected that transmission activity over the period will be based on the increasing need to strengthen tielines, first for reliability purposes, then for continued expansion of economy interchanges of power. Existing tielines increasingly are being used for economy transactions, which means that emergency backup is not available to the same degree as formerly. Without substantial new generating capacity coming on line, the need for substations and additional transmission lines will be to improve reliabilities by strengthening and upgrading existing circuits and building new ones. This construction should subsequently stimulate additional use of the augmented facilities for further capacity interchanges in order to postpone new generation investment.

Distribution spending, representing by far the lion's share of power deliver system knvestment, will continue to be driven by residential and commercial construction activity. With continuing low interest rates and relatively stable construction labor rates and materials costs, this stimulus to distribution expansion should continue, although moderating slightly by the end of the period.

"Other" spending increases

One area where a marked increase in capital investment projections occurs is in the "Other" catagory.

In past years, the majority of investment in this classification of capital spending consisted of headquarters and other office and service facilities, certain capitalized fuel resources and the like. Over the past decade, this classification of capital investment has run between 4 percent and 5.5 percent of the total.

For the period running from 1987 through 1991, "Other" capital spending for facilities and resources that do not fit into the generation, substation, transmission or distribution catagories will average about 14.5 percent. Included are utility investments in facilities and resources involved in broadened diversification programs.

Projected spending by regions

Regional patterns of capital investment and construction will follow population movement and general business activity. Figures for regional spending are expressed in millions of dollars in the following tables.

PROJECTED 5-YEAR CAPITAL EXPENDITURES
By NERC Region - in $ millions

Region	1987	1988	1989	1990	1991	5-Year total
ECAR	$ 3,626	$ 3,308	$ 3,232	$ 2,667	$ 1,758	$ 14,591
ERCOT	2,014	2,432	1,192	1,183	1,049	7,870
MAAC	2,488	2,592	2,381	2,304	1,505	11,270
MAIN	2,039	1,425	1,114	1,149	611	6,338
MAPP	1,008	899	984	966	869	4,726
NPCC	2,628	2,266	2,016	1,752	1,584	10,246
SERC	6,024	5,527	5,197	5,581	6,029	28,358
SPP	1,554	1,521	1,417	1,454	1,677	7,623
WSCC	7,229	7,029	6,657	6,830	6,191	33,936
Total	$28,610	$26,998	$24,189	$23,886	$21,276	$124,959

PROJECTED 5-YEAR CAPITAL EXPENDITURES
By Function - in $ millions

	1987	1988	1989	1990	1991	5-Year total
Generation	$13,047	$11,318	$ 9,625	$ 9,170	$ 7,853	$ 51,013
Substations	1,391	1,531	1,236	1,187	951	6,296
Transmission	2,880	2,842	2,752	2,516	2,126	13,116
Distribution	7,198	7,368	7,084	7,449	6,909	36,007
Other	4,094	3,939	3,492	3,565	3,437	18,527
Total	$28,610	$26,998	$24,189	$23,886	$21,276	$124,959

ECAR

	Gen	T&D	Other
1987	2,366	1,003	257
1988	2,080	961	267
1989	2,088	1,000	176
1990	1,509	1,004	153
1991	846	825	86
	8,889	4,793	961

Utilities in the East Central Reliability Coordination area will spend $14.59-billion for system expansion in the years through 1991. During the period, generation spending will decline steadily, from $2.36-billion in 1987 to less than $1-billion in 1991. Spending for transmission and distribution will remain fairly constant.

About half the utilities in ECAR currently are involved in life extension studies, but only a few are actively engaged in life extension projects.

ECAR utilities plan to add several small peaking and intermediate-size generation units prior to 1995 and several large coal-fired baseload units between 1996 and 2000.

ERCOT

	Gen	T&D	Other
1987	1,008	822	184
1988	1,391	868	173
1989	682	380	130
1990	691	334	159
1991	584	303	162
	4,356	2,707	808

Texas utilities will invest almost $7.9 billion for new plant and system in the next five years, with the heaviest investment, $2.4-billion to come in 1988. Of the total amount to be spent, better than half will go into new generation facilities and a third will go to meet substation, transmission and distribution needs. The balance, about 11 percent, will go for other purposes.

In general, about 25 percent of ERCOT utilities are involved in life extension projects, with additional utilities currently studying potential life extension programs for feasibility.

Some small, under 100 Mw, generating units will be added mostly in the 1990s. There also is potential for several large baseload units to be added in the latter years of the century.

MAAC

	Gen	T&D	Other
1987	1,222	914	351
1988	1,277	855	461
1989	1,184	760	437
1990	1,034	848	422
1991	625	613	267
	5,342	3,990	1,938

Mid-Atlantic Area Council utilities will invest $111.3 billion for new facilities in the next five years. About 47 percent of this capital investment will go for new and upgraded generation facilities, fairly evenly spent over the first four years, then dropping about 50 percent in the fifth year. T&D spending for the five-year period will total almost $4-billion or 35 percent.

MAAC utilities will need new capacity after 1992, with unit sizes ranging from 50 Mw to more than 600 Mw.

Most MAAC utilities are involved in life extension studies and more than one-half are working on specific active projects.

MAIN

	Gen	T&D	Other
1987	1,269	615	156
1988	709	671	145
1989	345	649	120
1990	354	671	124
1991	198	329	85
	2,873	2,934	631

Utilities in the Mid-America Interpool Network, comprised of utilities in Illinois, Eastern Wisconsin and Northeastern Missouri, will invest almost as much capital in power delivery facilities ($2.8-billion) as in power generation facilities ($2.9-billion) during the next five years. In fact, after 1987, when current generation projects are completed, they will spend $600-million more for T&D than for generation.

Only about a fourth of MAIN utilities are involved in life extension projects, but a number have begun or are carrying out studies that may lead to prospective active projects within the the next several years.

New capacity will not be needed until the mid-1990s. While there is a potential for one or more 400-600 Mw units to be added in the latter years of the century, the majority of utilities replying to *EL&P's* survey evidenced interest in peaking units, rated below 100 Mw.

MAPP

	Gen	T&D	Other
1987	478	376	155
1988	326	421	153
1989	429	268	196
1990	399	385	182
1991	339	379	152
5-yr total	1,970	1,829	838

The Mid-Continent Area Power Planners pool is the smallest of NERC's regions. Utilities in this area will invest $4.7-billion for new facilities over the next five years, with generation spending ($1.97-billion) barely topping transmission & distribution investment ($1.93-billion).

Only a few MAPP members have active life extension programs, although more report looking at the concept as a way to delay major new generation construction programs. About 18 percent of MAPP utilities are actively engaged in life extension work.

Most new generation will be needed after the mid-1990s, but a third of MAPP utilities have not yet determined when new capacity will be needed, nor what size addition ap-

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pears likely. The most-mentioned size currently is 100 Mw or smaller, although at least one unit rated higher than 600 Mw appears likely before the end of the century.

NPCC

	Gen	T&D	Other
1987	766	1,256	683
1988	418	1,407	440
1989	393	1,311	311
1990	331	1,128	293
1991	379	930	274
5-yr total	2,292	6,032	1,992

With generating reserve margins estimated above 25 percent for the 1987-1991 period, Northeast Power Coordinating Council utilities have reduced their planned capital expenditures for power generation. According to *EL&P* projections, NPCC utilities will spend $2.3-billion for generation additions and upgrades. At the same time, better than 2.5-times that amount—$6-billion—for power delivery facilities. NPCC utilities also will spend $1.9-billion for other capital programs during the five years.

SERC

	Gen	T&D	Other
1987	3,425	1,911	888
1988	2,800	2,057	669
1989	2,534	2,046	616
1990	2,706	2,205	670
1991	2,971	2,361	697
	14,437	10,581	3,341

The Southeastern Electric Reliability Council is the largest NERC area for demand and capacity, but ranks second in current capital investment. During the next five years, SERC utilities will remain in a growth mode, with demand increasing about 2.5 percent per year. To meet the demand increases, SERC utilities will invest $14.4-billion in new and upgraded generation facilities over the next five years, on a declining basis for the first three years, then increasing for the last two years of the period. During the period, SERC utilities will invest $10.6-billion for power deliver facilities, beginning with $1.9-billion in 1987 and increasing every year through the period. SERC utilities will invest a total $28.4-billion during the five-year period, the second highest of all NERC areas.

SPP

	Gen	T&D	Other
1987	419	873	262
1988	324	901	295
1989	288	849	280
1990	274	889	291
1991	443	932	303
	1,748	4,443	1,431

Southwest Power Pool utilities will devote the majority of their five-year capital investment to power delivery facilities. They will spend some $4.4 billion for substations and T&D lines, with annual investment increasing steadily throughout the period. Generation spending, projected at $1.75-billion for the five years, will decline for the first four years, then pick up slightly in 1991. Total spending by SPP members will be $7.6-billion.

Less than half of SPP utilities currently are involved in life extension projects, but a number are studying potential life extension work.

New capacity will be required in the SPP area after 1992.

WSCC

	Gen	T&D	Other
1987	2,084	3,696	1,448
1988	1,984	3,692	1,353
1989	1,712	3,709	1,236
1990	1,872	3,687	1,271
1991	1,470	3,314	1,407
	9,122	10,096	6,716

The Western States Coordinating Council is the largest of the NERC regions in geographic area and magnitude of capital investment. It also remains one of the faster growing regions in the country. During the next five years, WSCC utilities will invest almost $34-billion for new and upgraded facilities. The largest portion, $18-billion, will be devoted to power delivery facilities. Generation spending, $2.1-billion in 1987, will decrease steadily through the period.

WSCC utilities will need new capacity steadily to 2000 and beyond. Although some new, large, baseload capacity will be needed after 1996, the majority of capacity projected to be added through 2000 will be between 50 Mw and 400 Mw in size. More than half the utilities reporting said that while they anticipate need for new capacity, they cannot yet estimate the sizes of the units they will require.

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Inquire R.S. 4

Nuclear Regulatory Commission staff reorganized

WASHINGTON—Reflecting a change in its primary role, Nuclear Regulatory Commission Chairman Lando W. Zech, Jr. recently announced a reorganization of the NRC staff.

He said the new organization will focus the agency's major program offices on the day-to-day safety of the nuclear plants and make them more accountable for the NRC's safety programs.

"Our mission is far different today than it was in 1975 when the NRC was created. We have shifted from evaluation of construction permit and operating license applications to the regulation of a maturing operational industry," stated Zech. "As the plants presently in the final stages of construction are completed, we will have progressively less regulatory actions with large complex construction facilities and much more involvement with plant operations, maintenance, life extension and other operational issues."

The Office of Inspection and Enforcement is being dismantled and its functions transferred to the Executive Director of Operation, the Office of Nuclear Reactor Regulation and the Office of Nuclear Materials Safety and Safeguards.

Also, said Zech, the NRC's enforcement functions will be transferred to a new Office of Enforcement.

A new Office of Governmental and Public Affairs will be created that will coordinate the functions of the current Office of Congressional Affairs, the Office of Public Affairs, the Office of State Programs, and the Office of International Programs.

The NRC will expand the role of the Office of Analysis and Evaluation of Operational Data. Zech explained it will be a focal point for the continuing assessment of the safety of operational facilities, and will manage the review, analysis, and evaluation of reactor plant performance.

Responsibility for the resolution of generic safety issues will be assigned to the Office of Nuclear Regulatory Research.

The chairman announced that Harold Denton will head the Office of Governmental and Public Affairs; Victor Stello will be named Executive Director for Operation; and, Eric Beckjord will be head of the Office of Nuclear Regulatory Research.

NRC Chairman Lando Zech

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ing 3,260 MW, are expected to enter commercial operation during the winter period. NERC pointed out that notable installations are the Limerick 1 nuclear unit and the first phase of a dc tie from Quebec into New England, which provides a new 690 MW source to that area.

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According to Moody's, TUEC has managed its business risk well. However, said the ratings agency, further licensing delays and cost increases will continue to put pressure on cash flow and increase external financing requirements.

A detailed reanalysis, reinspection, and corrective action effort at the plant has been underway since late 1984.

Initial rate increase

Texas Utilities said it will try and hold the initial rate increase when Unit 1 comes on-line to 10 percent.

The utility said its new cost estimate takes into account the cost of money used to finance the plant's construction, cost of the reinspection and corrective action effort, engineering and construction costs and ongoing expenses.

"The construction and adequacy part of the program is essentially finished and the design adequacy review is in process," said Michael D. Spence, president of TUEC's Generating Division. "At the conclusion of this program, we will be able to assure ourselves and the Nuclear Regulatory Commission that all safety concerns have been identified and corrective actions completed."

The company estimates it will need approximately 11.8 million kilowatts of new generating capacity to serve its customers by 1996.

TUEC, a subsidiary of Texas Utilities Company, owns 87 $^{5}/_{6}$ percent of the plant. Remaining interest is owned by Texas Municipal Power Agency, Brazos Electric Power Cooperative, Inc., and Tex-La Electric Cooperative of Texas, Inc.

Other units delayed

Also, the company reported that its Twin Oak Unit 2 plant will go into service in 1993 instead of 1992, and the single-unit Forest Grove plant will go into service in 1994 instead of 1993. In addition, the company announced it will not build a fourth unit at its Martin Lake plant.